

## Claims

What is claimed is:

- 1           1.     A weak-link mechanism comprising:  
2           a stack of a plurality of thin material structures;  
3           said stack of structures forming a laminar structure; and  
4           each of said stack of structures including multiple weak-link  
5           connections providing controllable movements in a plane of the stack and  
6           said laminar structure having a set stiffness and stability.
- 1           2.     A weak-link mechanism as recited in claim 1 wherein each of  
2           said plurality of thin material structures include predetermined locating-holes,  
3           said locating-holes used with locating-pins to precisely stack said plurality of  
4           thin material structures.
- 1           3.     A weak-link mechanism as recited in claim 2 wherein said  
2           stack of a plurality of thin material structures are secured together with  
3           fasteners received in predefined locating-holes and includes an adhesive  
4           coated to sides of said stack, whereby said laminar structure being  
5           substantially mechanically equivalent to a single piece mechanism.
- 1           4.     A weak-link mechanism as recited in claim 1 wherein each of  
2           said plurality of thin material structures is formed of a metal.
- 1           5.     A weak-link mechanism as recited in claim 1 wherein each of  
2           said plurality of thin material structures is formed of a thin stainless steel  
3           sheet.
- 1           6.     A weak-link mechanism as recited in claim 1 wherein said  
2           multiple weak-link connections include a plurality of connecting links.
- 1           7.     A weak-link mechanism as recited in claim 1 wherein said  
2           multiple weak-link connections include at least four connecting links.

1           8.     A method for producing the redundantly constrained laminar  
2 structures as weak-link mechanisms by lithographic techniques comprising  
3 the steps of:

4                 repeatedly chemically etching a designed pattern with a mask to  
5 produce a plurality of individual substantially identical units; and  
6                 stacking the units together to form the laminar structure.

1           9.     A method for producing the redundantly constrained laminar  
2 structures as weak-link mechanisms as recited in claim 8 further includes the  
3 steps of securing the stacked units together with fasteners received in  
4 predefined locating-holes in said units; and applying an adhesive to the  
5 sides of the laminar structure to provide the mechanism substantially  
6 equivalent to a single piece mechanism.

1           10.    A method for producing the redundantly constrained laminar  
2 structures as weak-link mechanisms as recited in claim 8 wherein each of  
3 said plurality of individual substantially identical units is formed of a thin  
4 material.

1           11.    A method for producing the redundantly constrained laminar  
2 structures as weak-link mechanisms as recited in claim 8 wherein each of  
3 said plurality of individual substantially identical units is formed of a thin  
4 metal material.

1           12.    A method for producing the redundantly constrained laminar  
2 structures as weak-link mechanisms as recited in claim 8 wherein the step of  
3 repeatedly chemically etching a designed pattern with a mask to produce a  
4 plurality of individual substantially identical units includes the step of  
5 repeatedly chemically etching a designed pattern having multiple weak-link  
6 connections with a mask to produce a plurality of individual substantially  
7 identical units.

1           13.    A method for producing the redundantly constrained laminar  
2 structures as weak-link mechanisms as recited in claim 8 wherein the step of  
3 repeatedly chemically etching a designed pattern with a mask to produce a  
4 plurality of individual substantially identical units includes the step of  
5 repeatedly chemically etching a designed pattern with a mask to produce a  
6 set number of individual substantially identical units.

1           14.    A method for producing the redundantly constrained laminar  
2 structures as weak-link mechanisms as recited in claim 13 wherein said set  
3 number of individual substantially identical units is selected for providing a  
4 predefined stiffness for the laminar structure.